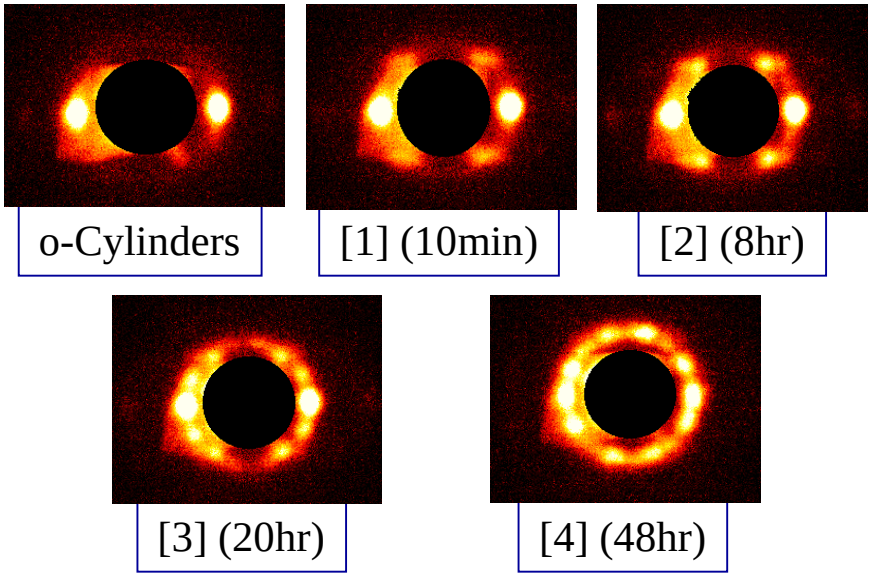
- **Transition pathway from cylinders to gyroid in a block copolymer solution**
- **Uses new in situ rheometer/SAXS facility at Minnesota**
- **Cylinder phase pre-aligned using shear(2-spot SAXS pattern, low G')**
- **Rheology trace shows clear evidence of an unexpected intermediate stage (4 more spots, G' plateau)**
- **Final stages show clear epitaxially grown gyroid phase (10 spots, high G')**
- **Intermediate state consistent with hexagonally perforated layer phase**
- **Shallower temperature quenches show a direct C to G transition**
- **Work performed by Dr. Chia Ying Wang and Tim Lodge**

SAXS patterns at various intervals after a temperature jump show evolution from oriented cylinders to hexagonally perforated layers ([1] and [2]) to gyroid ([3] and [4])



Dynamic elastic modulus for the same solution, with the corresponding SAXS traces. Note that the intermediate state appears within about 15 minutes, but the gyroid takes a day to be well-developed.